



'We bring people to space — We bring space to people'

Four tapped for key positions at Marshall Center



Kennedy



Roth



Kilpatrick



Davis

by Lynnette Madison

James W. Kennedy has been named deputy director of the Marshall Center, succeeding Carolyn Griner, who retired Jan. 3.

Marshall Center Director Art Stephenson also tapped three others for key positions at the Center: Axel Roth has been named associate director; John W. Kilpatrick Jr. was appointed director of the Engineering Directorate; and Dr. Jan Davis was chosen director of the Flight Projects Directorate.

Kennedy, who joined the Marshall Center in 1969 when he transferred as a cooperative education student from the Kennedy Space Center, Fla., has served as Marshall's director of engineering since June 1999.

Previously, Kennedy served as deputy

director and acting director for the former Science and Engineering Directorate. A native of Riverdale, Md., Kennedy has played an increasingly crucial role in NASA's Space Shuttle program and ultimately served as project manager of the Solid Rocket Booster Project Office. Additionally, he was assigned to the Advanced Space Transportation Project, where he served as project manager of the DC-XA and the X-34.

Roth, in his position as associate director, will provide executive leadership by reviewing and making decisions on overall Center management policies. Prior to this appointment, Roth, a native of Darmstadt, Germany, was director of the Flight Projects Directorate.

A charter member of the Marshall Center team, Roth has held a series of

increasingly responsible positions, including Payload Operations director for the Spacelab-2 Mission; manager of the Operations Office and Habitability Module Office, Space Station Projects Office; chief engineer of Spacelab Payload Integration; deputy manager of the Space Station Projects Office; deputy director and director of Program Development; and director of the Flight Projects Directorate.

Kilpatrick, who will assume the duties previously performed by Kennedy, served as deputy director of the Engineering Directorate prior to this appointment.

A native of Chamblee, Ga., he joined Marshall in 1968 as an aerospace engineer in the former Missions Operations Office. He has contributed to such major programs as Skylab, Spacelab, the International

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Looking back at Y2K — the year in review

Marshall's values, safety key to mission success

by Debra Valine

As the calendar flipped to the year 2000, many had waited to see what would happen to the world's computer systems — that dreaded Y2K bug. Yet, the transition took place — worldwide and at the Marshall Center — without a hitch. That successful transition set the stage for many great accomplishments at the Marshall Center during the year.

As we enter the new year, let's look back on some of the challenges Marshall faced in 2000. Marshall's core values of

people, teamwork, excellence, innovation and customers helped to meet those challenges. And at the center of it all, was safety.

People

NASA started 2000 with good news: Years of downsizing was discontinued and the Marshall Center was authorized to hire 190 new employees.

More good news for the Marshall workforce was the implementation of the dual career path promotions process. This

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Goldin praises NASA's accomplishments of 2000

What a difference a year makes. The year 1999 tested our character and our spirit of exploration. Each of you responded in 2000, answering those challenges with a diverse string of impressive achievements. I couldn't be more proud.

Today, you can look into the sky at one of our bright new stars and literally catch a glimpse of our future as the International Space Station orbits overhead. The arrival of the Expedition One crew ushered in a new era of international cooperation unprecedented in the history of space exploration. Through international partnerships, commercial ventures and customer-driven projects, we will do things in space not possible here on the Earth.

How did the universe evolve? Are we alone? We're trying to answer these fundamental questions of science and technology.

Some of the answers may be unfolding before our eyes. NASA's scientific research was recognized as world class this year.

Science Magazine credited NASA-led teams with three of the 10 most important scientific breakthroughs of the year 2000: Mars Global Surveyor's evidence of liquid water on Mars; creation of the most detailed map of the early universe, developed by BOOMERANG data; and the NEAR Shoemaker spacecraft's rendezvous with the asteroid Eros.

And not only is NASA's work earning kudos from the scientific community, but also from the general public. This year, NASA's Customer Service Rating, as measured by the National Partnership for Reinventing Government, rose from 80 percent in

1999 to 86 percent in 2000. NASA received the highest score of any federal agency, higher even than the U.S. Mint's rating among coin collectors.

In 2001, we face a new frontier of possibilities and opportunities.

It is hard to think of this new year and not be reminded of Arthur C. Clarke's literary epic. In 1968, Clarke gave us a glimpse of a fantastic future — a world that took for granted artificial intelligence, video telephones, multimedia communications and private companies exploring the commercial potential of space.

Clarke's prophetic observations inspired a mission of discovery for researchers determined to turn science fiction into science fact. In 2001, our space odyssey is just beginning.

We lost some of the best and brightest members of our NASA family this year. It reminds us to cherish each other and to do the most with each day we have on Earth. We mourn their loss, but honor their memory with renewed commitment to safety, teamwork and excellence. We should also use this time at the beginning of a new year to take a personal inventory of our lives, paying closer attention to our health, our family and our friends.

Early in the 17th Century, Galileo said the universe could not be read until we learned the language.

As we enter the 21st Century, NASA will continue to look up at that same starry empyrean, open the doors of discovery and learn the language of the universe.

— *Daniel S. Goldin*
NASA Administrator



Courtesy photo

Norwood visits Marshall

Dr. Robert Norwood, second from left, the head of NASA Commercial Technology, visited Marshall's Productivity Enhancement Complex last month. Frank Zimmerman, right, explains the chrome coatings elimination process. With more than 40 research cells, the Productivity Enhancement Complex can accommodate a variety of activities such as creating or modifying computer programs for industrial robots used in welding processes, manufacturing space-age composite materials, vacuum plasma spray techniques, rapid prototyping and cryogenic insulation development.

Crewmembers from Shuttle's 100th launch visit Center

by Debra Valine

Four STS-92 crewmembers from the Space Shuttle's historic 100th launch last October visited Marshall Monday to thank the Marshall team for its efforts for safe space flight and to share the 13-day mission's high-

lights with employees and visiting students.

Shuttle Commander Brian Duffy, pilot Pamela Melroy, and mission specialists Leroy Chiao and Jeff Wisoff showed slides, a video and spoke to the audience in Morris Auditorium.

The STS-92 crew signed autographs and presented Silver Snoopy Awards to 23 Marshall employees.

The Marshall Center played a key role in the crew's mission. The astronauts had trained at Marshall for their tasks of attaching the pressurized mating adapter, a common berthing mechanism, and the Z-1 truss to the International Space Station.

This was the last crew to visit the Station prior to the Nov. 2 arrival of the Expedition One crew that would spend several months onboard the Station.

"We were 100 percent successful in

See Silver Snoopy Awards on pages 6-7

our mission," Melroy said. "The training we received at Marshall prior to the mission made that possible. It was the only place we were able to practice the procedure for installing the common berthing mechanism end-to-end. Attaching the mechanism on orbit looked exactly the same as it did here." The common berthing mechanism is how most of the components are attached to the Space Station.

The next step for the International

See Crew visit on page 7



Photo by Emmett Given, NASA/Marshall Space Flight Center

STS-92 Commander Brian Duffy, right, greets Benton Key and his mother Leigh Key during an autograph session following the mission highlights presentation in Morris Auditorium Monday.

Key

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Space Station, and payload development in various laboratories within the Science and Engineering Directorate.

In 1985, Kilpatrick was appointed team leader of the Flight Requirements Team in the Systems Analysis and Integration Laboratory — the first of numerous key positions within the former Science and Engineering Directorate. He advanced in 1986 to chief of the Flight Operations Branch of the laboratory, and in 1990 was named deputy chief of the Mission Systems Division, as well as chief of the Operations Engineering Division — both within the Mission Operations Laboratory. In 1998, Kilpatrick was named director of the Systems Integration and Analysis Laboratory.

Davis — a former astronaut who flew on three Space Shuttle missions — will assume Roth's responsibilities as director of the Flight Projects Directorate, where she previously served as deputy director.

A native of Huntsville, Davis began her career at Marshall in

1979 as an aerospace engineer. She subsequently supported major NASA programs and projects, including the Hubble Space Telescope, the Chandra X-ray Observatory and the Hubble Space Telescope Servicing Mission. In 1986, she became a team lead and lead engineer for the redesign of the Shuttle Solid Rocket Booster External Tank attach ring.

Davis was selected to join the astronaut corps in 1987. She spent more than 670 hours in space over the course of her three flights: STS-47, STS-60 and STS-85. While in the astronaut corps, she also served as the Mission Development Branch chief in payloads, robotics and extravehicular activity for the Space Shuttle. In 1998, Davis became the director of the Human Exploration and Development of Space Independent Assurance Office for NASA Headquarters.

She returned to Marshall in 1999 as deputy director of the Flight Projects Directorate.

The writer, employed by ASRI, supports the Media Relations Department.

No proof of insurance, no visitor pass to Arsenal

Arsenal visitors must maintain liability insurance on vehicles

by Beth Skarupa

More than 3,000 visitors per week pass through the gates of Redstone Arsenal, but the new year brings a new policy that may cause the guards to turn some of those visitors away: Drivers now have to show proof of insurance before being issued a visitor's pass.

The new policy is in accordance with the Mandatory Liability Insurance Act approved by Alabama Gov. Don Siegelman in May.

Since June 1, 2000, Alabamians have been required not only to maintain liability insurance on their vehicles, but to carry proof of their insurance within their vehicles and provide this proof to any law enforcement officer on demand.

Although Redstone Arsenal law enforcement personnel have been enforcing the requirements of the law since it came into effect, visitors have not been routinely asked for proof of insurance at the Arsenal gates.

"The commander (of the installation) has the authority to deny the privilege of driving on post, and could do so if a driver is unable to provide proof of insurance," said Capt. Andrew Sinn, a

legal officer in Redstone's Office of the Staff Judge Advocate.

The law states that no person shall operate, register or maintain registration of, or permit another to operate, register or maintain registration of, a motor vehicle unless the motor vehicle is covered by a liability insurance policy. The law does not apply to vehicles that are properly registered in another state and are not legally required to be registered pursuant to Alabama law.

Evidence of current liability insurance coverage must be kept within the vehicle at all times. The evidence may include, but is not limited to, the following: (a) An insurance card, or temporary card, provided by the insurer; (b) The combination of proof of purchase of the motor vehicle within the previous 60 calendar days and a current and valid insurance card issued for the motor vehicle replaced by such purchase; (c) The current declarations page of a liability insurance policy; (d) A liability insurance binder (or legible copy), certificate of liability insurance (or legible copy), or receipt for payment to an insurer or its authorized representative for a liability insurance premium (or legible copy).

The documents referred to in (d) must contain all of the following information: insurance provider's name; policy number

(not required on a binder or premium receipt); effective date; expiration date; name of insured(s); make, model, year and vehicle identification number of the vehicle; date of premium payment (required only on premium receipt); and signature of authorized insurance representative.

"If you have a rental car, you can show the rental papers," said Maj. Dave Dunn, Redstone's provost marshal. "The rental car papers should suffice."

If a person is unable to display proof of insurance at a gate checkpoint, their Alabama registration may be suspended. In addition, they may be charged with a misdemeanor and, if convicted, may be fined and/or have their driver's license suspended. Any person failing to provide proof of insurance may be issued a citation.

Drivers requesting visitor passes can expect to be asked for proof of insurance at the Arsenal gates. If unable to provide proof, not only will they not be allowed to drive on the Arsenal, but they may be issued a citation. Visitors need to be aware of this change.

"You are assumed to have knowledge of the law," Sinn said. "Ignorance is not a defense."

The writer is a Redstone Rocket staff writer.

Future City Competition being held at Marshall Jan. 19

Students across Alabama have been working very hard getting ready for the Alabama Regional Future City Competition being held Jan. 19 in the Bldg. 4200 lobby at Marshall.

The competition, co-sponsored by the National Engineer's Week, kicks off at 8:30 a.m. in Morris Auditorium with a welcome from Jim Pruitt, manager of the Education Programs Department and a speech by Center Director Art Stephenson. An awards ceremony at 4 p.m. will announce who will represent Alabama at the National competition in Washington, D.C., Feb. 18-24.

Students' futuristic city models will be on display throughout the day in the lobby.

This competition was designed to foster science, math and engineering to seventh- and eighth-grade students through

hands-on, real world applications.

Each team consists of five people: one teacher sponsor, an engineer mentor and three students from a school. The competition is comprised of four parts: A computer simulation of a future city using the SimCity 2000 software by Maxis; a city model built to scale by students using their simulated city map; an essay written by students to describe their future city and to answer a technical question, and; a presentation of the city during the regional competition.

All areas will be judged and scores totaled to select the winners of regional competition. All winners will receive trophies, scholarships toward their science programs, and the first-place winners will receive an all expense paid trip to compete in the National Finals in Washington, D.C.

Volunteers are needed for this event. Anyone interested in judging or assisting with competition activities should call Sonya Hutchinson at 544-3312.

Review

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process provides a clear promotion route to the GS-14 and GS-15 level for engineers and scientists without requiring them to become supervisors.

Marshall helped develop the Integrated Financial Management Program that will streamline the way business is conducted throughout NASA.

But probably the best news of the year was that for the first time in the past seven years, NASA's requested FY01 budget was approved. The budget includes funding for the Space Launch Initiative.

Throughout the year, Marshall celebrated its people and accomplishments with many special events. The NASA Exchange sponsored an evening outing to a Huntsville Stars baseball game and Center Director Art Stephenson threw out the first pitch April 6. More than 31,000 people attended the Center's Open House May 20 to get a close look at the innovative technologies that drive the nation's space program. And the Marshall team celebrated its 40th Anniversary from July to September culminating with a grand celebration in September.

Teamwork

Marshall's civil servants and contractor employees work as a team every day to accomplish its many missions.

Marshall's team also includes the surrounding community.

In 2000, Marshall signed agreements with Alabama Gov. Don Siegelman to open the National Space Science and Technology Center in Huntsville. A Tri-lateral agreement with the U.S. Air Force and the Department of Energy in Tennessee allows the trio to work jointly on research, development and test activities. Marshall partnered with East Tennessee State University in Johnson City to work jointly on research, education and the transfer of new technologies to U.S. industries. And Marshall and the U.S. Army Aviation and Missile Command at Redstone agreed to share knowledge, facilities and technology.

Marshall and Lockheed Martin agreed to proceed with development of the X-33 technology demonstrator.

Excellence

The Marshall-managed Chandra X-ray Observatory celebrated its one-year anniversary in August. Chandra was named the Editor's Choice winner the 2000 Discover Magazine Awards for Technological Innovation. The Chandra team also was recognized with a Stellar Award from the Rotary National Award for Space Achievement Foundation, and received the Air and

Space Trophy from the Smithsonian Institute.

In May, NASA's Office of Aerospace Technology presented Marshall's MC-1 engine team with an award for developing technology aimed at reducing the cost to launch a pound of payload from \$10,000 to \$1,000 by 2010. The MC-1 engine was successfully integrated into the X-34 technology demonstrator in September.

In the spring, Sverdrup Technology Inc. of Tullahoma, Tenn.,

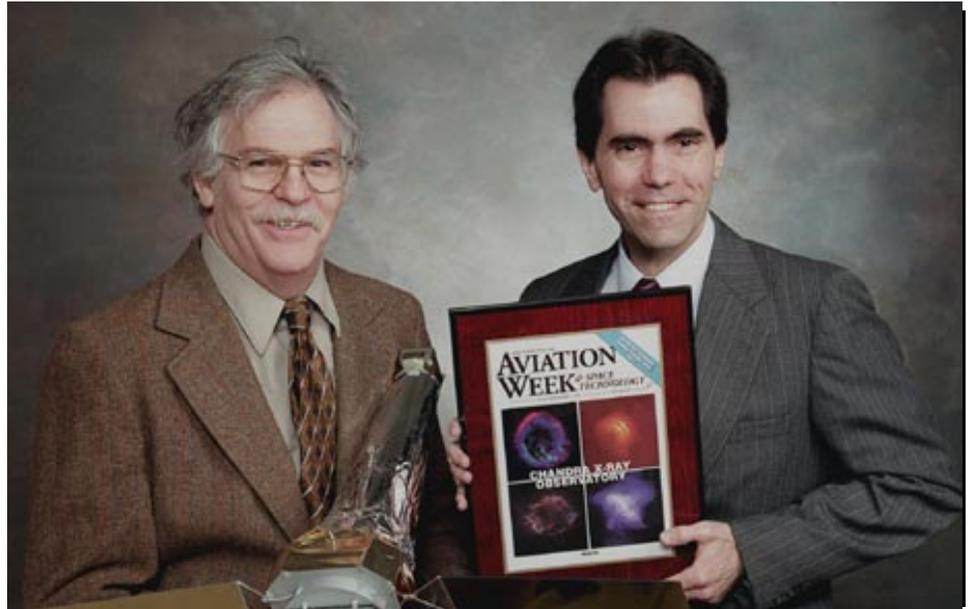


Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Martin Weisskopf, left, and Tony Lavoie of the Chandra X-ray Observatory team display a plaque showing Chandra on the cover of "Aviation Week" magazine. The cover story was one of many accolades Chandra received in 2000.

finished as a semifinalist in NASA's annual George M. Low Award for contractor excellence.

And Marshall's history book, "Power to Explore: A History of Marshall Space Flight Center 1960-1990," received the Association of Aeronautics and Astronautics Award for best history book for 2000.

Innovation

Marshall team members continually improve and refine technologies that make space travel better. In February, the second magnetic levitation track was installed at Marshall. A maglev launch system uses magnetic fields to levitate and accelerate a vehicle along a track at speeds up to 600 mph where the vehicle shifts to rocket engines for launch to orbit.

The first major component of an experimental composite liquid oxygen tank for NASA's X-34 rocket plane was cured in an oversized oven at Marshall. Two tanks are being assembled and tested at Marshall by Lockheed Martin Michoud Space Systems of New Orleans.

The X-33 Linear Aerospike Engine completed its first

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Twenty-three receive Silver Snoopy Awards

During the STS-92 Space Shuttle mission crew visit Monday, Shuttle Commander Brian Duffy, pilot Pam Melory, and mission specialists Leroy Chiao and Jeff Wisoff presented Silver Snoopy Awards to 23 Marshall team members.

The Silver Snoopy is awarded to individuals for professionalism, dedication and outstanding support of the space program.



Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Wisoff, right, presents a Silver Snoopy Award to Joe Stiles, a contractor with Cortez III.



Photo by Emmett Given, NASA/Marshall Space Flight Center

Duffy, center, presents Silver Snoopy Awards to Frank Prince, left, and Patrick McDuffee of the Systems Management Office.



Photo by Dennis Olive, NASA/Marshall Space Flight Center

Melroy, center, presents awards to, from left, Rodney Brian Key, Danny Xenofos, Alton English and Nelda Hiley of the Flight Projects Directorate.



Photo by Terry Leibold, NASA/Marshall Space Flight Center

Chiao, right, presents a Silver Snoopy Award to Mark Denton of the Chief Financial Officer's Office.



Photo by Terry Leibold, NASA/Marshall Space Flight Center

Chiao, second from left, presents Silver Snoopy Awards to Paul Luz, left, Helen Cole, second from right, and Roy Young of the Space Transportation Directorate.



Photo by Dennis Olive, NASA/Marshall Space Flight Center
Melroy, center, presents Silver Snoopy Awards to, from left, Charles Martin, Margot Thigpen, Wilda Davis and Jay Nichols.



Photo by Emmett Given, NASA/Marshall Space Flight Center
Duffy, center, presents awards to Jeffrey McCaleb, left, and Susan Allison of the Space Shuttle Projects Office.



Photo by Doug Stoffer, NASA/Marshall Space Flight Center
Wisoff, center, presents Silver Snoopy Awards to Dani Davis, left, and David Newman of Lockheed Martin.



Photo by Emmett Given, NASA/Marshall Space Flight Center

Duffy, center, presents Silver Snoopy Awards to Warren Woods, left, and Alex Adams of the Safety and Mission Assurance Office.



Photo by Doug Stoffer, NASA/Marshall Space Flight Center



Photo by Terry Leibold, NASA/Marshall Space Flight Center

Left photo: Wisoff, left, presents a Silver Snoopy Award to Robert Pickle of Computer Sciences Corp. Right photo: Chiao, right, presents an award to Kathleen Gordon of Getronic Government Solutions.

Crew visit

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Space Station will be the incorporation of the Research Laboratory Destiny scheduled to launch Jan. 19.

“Destiny will be the primary orbiting research lab,” said Chiao, who may one day live aboard the Station. “It is a new direction for everyone because it is an international space station. We do not know what we will discover up there. We will see a

lot of new discoveries that we never thought about before.”

“We were just the point of the spear,” Duffy said. “There are a lot of folks — including all of you — who make space flight safe. When we were thundering into space, we were comfortable that you had done your jobs. Keep up the great work.”

The writer, employed by ASRI, is the Marshall Star editor.

Job Opportunities

CPP-01-009-DS, Educations Program Specialist GS-1720-07 (2 vacancies), Education Programs Department, Customer and Employee Relations Directorate. Closes Jan. 19.

CPP-01-012-KP, Executive Support Assistant GS-303-08/09 Office of the Director. Closes Jan. 16.

Obituaries

Duerr, Friedrich, 91, of Huntsville, died Dec. 20. He was an original member of Wernher von Braun's rocket team when it was formed in Germany. He retired from Marshall in 1973 where he worked on rocket guidance systems. He is survived by his wife, Sigrun Hirth Duerr.

Jones, Milton S., 75, of Huntsville, died Dec. 20. He retired from Marshall in 1980 where he worked as a supervisory operating accountant.

Clark, Billy D., 64, of Arab died Dec. 21. He retired from Marshall in 1993 where he worked as a supervisory contract specialist. He is survived by his wife, Billie Clark.

Hill, Robert W., 70, of Huntsville, died Dec. 21. He retired from Marshall in 1986 where he worked as a supervisory aerospace engineering technician. He is survived by his wife, Billie F. Hill.

Jones, Stuart H., 84, of Huntsville, died Dec. 22. He retired from Marshall in 1968 where he worked as a program analyst officer. He is survived by his wife, Phyllis Lee Jones.

Hoop, Herbert H., 82, of Huntsville, died Dec. 24. He retired from Marshall where he worked as an aerospace engineer. He is survived by his wife, Nina Hoop.

Smith, Thomas H., 74, of Huntsville, died Dec. 26. He retired from Marshall in 1985 where he worked as an engineer. He is survived by his wife, Norma L. Smith.

Henry P. McMeans, 75, of Tanner, died Dec. 28. He retired from Marshall in 1981 where he worked as a supervisory aerospace engineering technician. He is survived by his wife, Reba Barnes McMeans.

Niblitt, James E., 64, of Huntsville, died Dec. 29. At the time of his death, he worked as a supervisory aerospace engineer on Solid Propulsion Systems in the Space Transportation Directorate. He is survived by his wife, Sandra M. Niblitt, and three children: James Curtis Niblitt of Huntsville; Catherine D. Williams of Conroe, Texas; and Larry Alan Niblitt of Nashville, Tenn.

Chandra reveals the X-ray glint in the Cat's Eye

Scientists have discovered a glowing bubble of hot gas and an unexpected X-ray bright central star within the planetary nebula known as the Cat's Eye using the Marshall-managed Chandra X-ray Observatory. The new results, presented Monday at the American Astronomical Society meeting, provide insight into the ways that stars like our Sun end their lives.

Scientists believe they are witnessing the expulsion of material from a star that is in the last stages of its existence as a normal star. Material shed by the star is flying away at a speed of about 4 million miles per hour, and the star itself is expected to collapse to become a white dwarf star in a few million years.

The X-ray data from the Cat's Eye Nebula, also known as NGC 6543, clearly show a bright central star surrounded by a cloud of multimillion-degree gas. By comparing the Chandra data with those from the Hubble Space Telescope, researchers are able to see where the hotter, X-ray emitting gas appears in relation to the cooler material seen in optical wavelengths by Hubble.

"Despite the complex optical appearance of the nebula, the X-ray emission illustrates unambiguously that the hot gas in the central bubble is driving the expansion of the optical nebula," said You-Hua Chu of the University of Illinois and lead author of the paper submitted to the *Astrophysical Journal*. "The Chandra data will help us to better understand how stars similar to our Sun produce planetary nebulae and evolve into white dwarfs as they grow old."

With Chandra, astronomers measured the temperature of the central bubble of X-ray emitting material, and this presents a new puzzle. Though still incredibly energetic and hot enough to emit X-rays, this hot gas is cooler than scientists would have expected from the stellar wind that has come to stagnation from the initial high speed of 4 million miles per hour.

At first, the researchers thought that the cooler, outer shell might have mixed with the energetic material closer to the central star to create this "lukewarm" area. However, this theory apparently does not apply for NGC 6543. Chu and her colleagues found that the chemical abundances within the hot gas were like those in the wind from the star, and different from the cooler outer material. These results indicate that mixing is not occurring, and that the cooling between the inner and outer shells of material is due to some other process.

The intensity of the X-rays from the central star was also unexpected. The star itself has a surface temperature of about 60,000 degrees, whereas the X-ray measurement indicates a temperature of a few million degrees.

More information about the Chandra X-ray Observatory is available on the Web at:

<http://chandra.harvard.edu> and <http://chandra.nasa.gov>

Protect yourself from winter work hazards

When you work in the cold, your body uses 60 percent of its fuel just to keep itself warm. Because of this, you can tire more easily than you notice. As you get more tired, you're more prone to the dangers of winter weather — hypothermia, frostbite and poor awareness.

Here's how to protect yourself:

Acclimate to the cold. Before you launch fully into outside work, give your body a chance to get used to the cold.

Take enough breaks. Take turns with a co-worker on being outside. As one person tries to warm up, the other is outside working.

Wear layers. The Occupational Safety and Health Administration recommends that workers wear three specific layers of clothing to stave off the cold and wet:

1. An outer layer that serves as a windbreaker but allows for ventilation.
2. A second layer that absorbs sweat and still insulates.
3. A third layer close to the skin that is thinner and allows for ventilation.

Get extra protection for hands and head. Your mother was right to make you wear a hat in the winter. It can help retain 40 percent of body heat that otherwise would escape from your head.

If you have to wear a hard hat, use a hard-hat liner that covers your ears, cheeks and chin. And always wear the proper hand gloves. Make sure they're neither too small, which can further restrict blood flow to your fingers, or too large, which can get caught in machinery.

Insulate your feet. In addition to wearing warm woolen socks, use insulating muffs around your ankles and over the top of your work shoes.

Cold, hard facts

Here are some of the physiological changes that happen in your body when it's exposed to the cold:

- Frostbite literally is your tissue freezing. Ice crystals form between cells and cause the affected area to turn white and cold.

- When your body's core temperature of 98.6 degrees lowers even just 3.6 degrees, you'll experience symptoms like lethargy, shivering, mental confusion and decreased motor function. When the body temperature falls below 90 degrees, humans run the risk of heart failure.

— *Adapted from Occupational Health & Safety*

Fastening seat belts help prevent injuries; it's the law

Recent auto accidents have left several Marshall employees injured.

Aside from the obvious safety reasons to buckle up, motorists now face legal concerns as well.

According to Christi Dame, an attorney in the Chief Counsel's Office, "a motorist's failure to wear a seat belt on any Alabama road, including those on Redstone Arsenal, may reduce the money awarded to an injured driver or passenger if a lawsuit arises."

Several states allow an affirmative defense known as the Seat Belt Defense. Under this theory, an injured plaintiff's failure to buckle up is contributory negligence. Depending upon the state, this defense will reduce one's damages or prohibit recovery completely.

Although Alabama courts do not allow this defense, Dame said, "Clever defense attorneys do stress to the jury in opening and closing arguments that an injured driver or passenger was not wearing his seat belt. When the jury deliberates, they are going to remember that information and reduce the plaintiff's recovery anyway."

Dame added that NASA employees are required by Executive Order to fasten their seat belts when on official business. She said it is especially important that Marshall employees remember to buckle up when traveling outside Alabama.

Currently, 50 percent of states allow the Seat Belt Defense, and an injured motorist might be left with no method of recovery because he or she failed to fasten a seat belt.

IMAX movie takes audiences for a ride with the Blue Angels

Sean Tucker's gravity-defying showmanship as he flies a biplane and the riveting performance of the Navy's Blue Angels are featured in the IMAX film, "The Magic of Flight."

It opens for a yearlong run at the U.S. Space & Rocket Center's Spacedome Theater Monday.

The 39-minute, 70mm documentary balances the excitement of air shows with the science and history of flight.

"The Magic of Flight" will be featured at 11 a.m., 1 p.m. and 3 p.m. daily from Monday through the end of the year. The second Spacedome feature, "Destiny in Space," will show daily at noon and 2 p.m.

Tickets to the Space & Rocket Center are \$14.95 for adults and \$10.95 for children and include one Spacedome movie. Spacedome tickets purchased separately are \$6.50 for adults and \$5.50 for children.

Call 721-7114 for specific features and show times, which are subject to change.

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demonstration of full-thrust vector control at Stennis Space Center, Miss., in February. The NASA/Boeing Rocketdyne team tested the XRS-2200 Linear Aerospike Engine for 125 seconds. This was the longest test run to date at 100 percent power.

In May, Marshall marked a major milestone in the X-37 project when an 85-percent scale test vehicle of the experimental space plane was delivered to Dryden Flight Research Center at Edwards, Calif., for flight testing.

Customers

Marshall expertise, equipment and technologies are used every time the Space Shuttle flies. In February, the Marshall Center provided power and coolant to the payload onboard the STS-99 mission, as the Endeavour crew mapped the Earth to demonstrate the technology for obtaining high-resolution digital topographic mapping of the Earth. And with the 100th launch of the Space Shuttle, STS-92 crewmembers attached two key components to the International Space Station that increased its mass by 10 tons, and prepared the Space Station for human habitation.

To help keep track of millions of parts required for each Space Shuttle, Marshall developed the matrix symbol, a sort of space-age bar code. The matrix symbol is small, permanent, scannable and sometimes invisible, but it is capable of storing 100 times the information of a bar code.



Photo by Doug Stoffer, NASA/Marshall Space Flight Center

Astronauts Pam Melroy, left, and Koichi Wakata train on a robotic arm simulator at Marshall. Marshall plays a key role in all Space Shuttle flights.

Safety

None of Marshall's successes would be possible without undying attention to safety. It's a combination of the five values, tied together with safety, which makes success possible.

As 2001 gets under way, Marshall's employee and contractor team will continue to approach each mission with these values in mind.

The writer, employed by ASRI, is the Marshall Star editor.

Training

Procurement seminar

Socioeconomic Procurement as a Business Imperative" will be presented from 9 a.m.-3 p.m. Jan. 19 in Bldg. 4200, room G13-D. This teambuilding session is designed to create awareness and support for NASA's efforts to ensure the inclusion of Small Disadvantaged Business firms in every aspect of contracting and procurement. Civil servants may register to attend via AdminSTAR. For more information, call Lisa Greatouse at 544-0283.

Safety, health makeup session

A Safety and Health training session is scheduled from 8 a.m.-4:30 p.m. Jan. 23. Civil servants interested in attending should send an e-mail to Pat Schultz.

Quality Awareness training

This series of four live seminars features Bruce Snell, president and chief executive officer of BSG International Inc. and author of Breaking Through the Four Barriers to Quality, will be presented from 2-4 p.m. Jan. 17, 19, 26 and 31 on Marshall Continual Learning Channel 14. Discover how the four barriers to quality impact your organization daily, frustrating your employees and customers.

Understand that the four barriers to quality have a definite cause and effect on your people and process.

- Jan. 17 — Barrier One: Breaking Through Fear
- Jan. 19 — Barrier Two: Breaking Through Lack of Communication
- Jan. 26 — Barrier Three: Breaking Through Lack of Written Procedure
- Jan. 31 — Barrier Four: Breaking Through Lack of Training

To enroll and receive the materials for these seminars, e-mail your name and phone number to: edtec@msfc.nasa.gov.

Mentors/advisers workshop

A workshop for prospective research mentors/advisers will be Jan. 24. The workshop provides information about roles, responsibilities, policy changes, timelines and processes related to higher education programs. Register to attend at: http://www1.msfc.nasa.gov/education/registration_form.html

SHARP mentors

The Education Programs Department is initiating the 2001 Summer High School Apprenticeship Research Program (SHARP). SHARP is an eight-week paid apprenticeship for high school students who reside within commuting distance to a NASA field installation. Call Alicia Beam at 544-2849.

Center Announcements

Griner reception

A retirement reception honoring former Center Deputy Director Carolyn Griner will be at 6 p.m. Feb. 1 and the Huntsville Marriott. Tickets — at \$5 each — will be available from administrative officers beginning Friday.

Marshall toll free number

A toll free number at Marshall is available for employees who live outside the local calling area or are traveling. Instructions for this service can be found on "Inside Marshall," How to Check Telephone/Voice Mail. This same service can also be used to check the Center Announcements. To use this service, dial 1-888-CHK-MSFC (1-888-245-6732). As soon as the voice mail system recording begins, enter 4-HELP (4-4357). Select Option 5 for Marshall Announcements.

Arsenal gate delays

Jan. 16-18, the U.S. Army at Redstone Arsenal will conduct an exercise to ensure appropriate response to increased national or international tensions or a real-world incident of terrorism. This exercise will result in probable delays at the gates and may include checks of vehicle interiors. Be prepared to show proof of insurance and a current picture identification.

Blue Cross/Blue Shield Rep

The Federal representative from Blue Cross/Blue Shield will be at the Center from 8:30-10:30 a.m. Tuesday in Bldg. 4200, room 306, to assist employees with questions and claims.

Special Visitor Pass

The Protective Services Department is extending the use of the yellow Special Visitor Pass for those individuals who have demonstrated a need for unbadged personnel driving a decaded vehicle to enter the Arsenal. The new pass will be good through March. If you have already been issued a pass and desire

an extension, you may pick up a new pass at either Bldg. 4312 or in the Bldg. 4200 lobby. For more information, call the Protective Services Department at 544-4538 or send an e-mail to: vic.dubose@msfc.nasa.gov.

Clubs and Meetings

Marshall Retirees Association

The annual membership fee of \$30 was due Jan. 1. Checks should be mailed to MSFC Retirees Association, P. O. Box 4492, Huntsville, AL 35815. All NASA retirees are eligible to join. For more information, call Chuck Vedane at 883-4217.

NCMA luncheon

The Huntsville Chapter of the National Contract Management Association (NCMA) will meet for lunch at 11:30 a.m. Jan. 18 at the Redstone Officers' and Civilians' Club. Cost is \$10. Mark J. Lumer, contracting executive for the U.S. Army Space and Missile Defense Command, will speak. For reservations, send an e-mail to: depelham@hiwaay.net or call 533-394 by Tuesday.

NARFE meets

The National Association of Retired Federal Employees (NARFE) will meet Saturday at 9:30 a.m. at the Senior Center on Drake Avenue. Carol Sellers of H&R Block will address income tax changes and filing procedures for tax year 2000. For more information, call 881-3168.

MARS Valentine Dinner Dance

Tickets for the Feb. 10 MARS Valentine dance will be available Jan. 15 from the MARS Ballroom Dance Club. The formal event will be held at the Von Braun Center East Hall and will feature ballroom music by the Little Big Band. Tickets are \$25 per person with a \$5 discount for members and are available through Feb. 5. They can be purchased from Linda Kinney at 544-0563, Tamara

Landers at 544-6818, Pat Sage at 544-5427, Ed Ogozalek at 837-1486, Bob Williams at 544-3998, Hugo Berry at 544-3525, Woody Bombara at 650-0200, Joyce Davis at 880-2270, and Earl Herndon at 534-7408. Reservations for a table of eight can be made by calling Bombara.

One-step, tango lessons

The MARS Ballroom Dance Club has scheduled one-step lessons on Monday and tango lessons on Jan. 22 and 29 in the Parish Hall of St. Stephen's Episcopal Church at 8020 Whitesburg Dr. Intermediate classes will be taught from 7-8 p.m. and beginner classes from 8-9 p.m. at a cost of \$6 per person per night. The instructor is Bryon Fondren who is certified at both Arthur Murray and Fred Astaire dance studios. For more information, call Woody Bombara at 650-0200.

Vietnam Veterans cookbook

The Vietnam Veterans of America in Athens is selling a cookbook, "Veterans' Favorite Recipes" for \$13.50 plus \$3 shipping. Proceeds will benefit a scholarship fund for descendants of Vietnam veterans in the North Alabama area. For more information, call Rickey Knowles at (256) 729-8150 or send an e-mail to: rickey1947@aol.com. To purchase the cookbook, send a check payable to VVA Chapter 511 to Rickey Knowles, 6886 US 72 W, Athens, AL 35611. For more about the Vietnam Veterans of America, visit the Web at: <http://vvnv511.itgo.com>

Genealogy society meets

The Huntsville Genealogical Computing Society will meet at 7 p.m. Monday in the auditorium of the Huntsville-Madison County Main Library. Pam Kingsbury, an independent scholar from Florence, will speak on writing an autobiography and family history.

Employee Ads

Miscellaneous

- ★ Ten metal gray-toned vent covers, 6 - 4"x12", 4 - 4"x10", \$3 ea. obo. 722-7927
- ★ Optimus CD8150 5-disc CD changer w/ manual and cable, \$80. 722-9483
- ★ Dining room table; round, 48", pedestal base, solid wood, walnut finish, \$65. 961-1603
- ★ External modem for Mac, 56K, in original box, \$40. 882-1780
- ★ Old toy iron stove, Crescent, \$5. 882-1097
- ★ Craftsman riding lawn mower, 42", 14.5HP, \$150. 682-5181
- ★ Homelite Model LRE4400 generator, portable, electric, 4000 watts, \$500 firm. 881-0749
- ★ NordicTrac Pro skier w/monitor, \$300. 353-0933
- ★ Baby bed, mattress, bed covers, \$80; Graco baby swing, \$30; booster car seat, \$15. 837-6274
- ★ Golf clubs, 1, 3, & 5 metal woods, 3-PW, & SW w/bag, \$250. 232-1171
- ★ Wheel horse garden tractor, 37" mower, rear bagger, dump cart, 10HP Kohler, \$600 obo. 536-2628
- ★ Multi-gym, Marcy Mach 3, 210 lbs., \$300. 461-8721
- ★ Martial arts hand-held kicking target, 15"x26"x9". 256-739-9775
- ★ Lazy Boy rocker/recliner, large, burgundy color; TY 2000 "Thank You" bear. 881-5093
- ★ IBM PC, 400MHz, 128MB Ram, 13.5GB hard drive, DVD-ROM, speakers, \$450 w/o monitor. 882-2654
- ★ Bose speaker stands, 4 ea., authentic Bose telescopic base, wire feed through, \$25. 772-4205
- ★ Craftsman 10" radial-arm saw, w/attachments and 3-drawer metal cabinet, \$300. 881-2435
- ★ 1989 Wellcraft 192 Classic, cuddly cabin, 4.3L V-6 Mercruiser, dry stored for life, \$7,500. 797-6173/880-8008
- ★ Coffee table w/2 matching side tables, glass surface with gold/black support, \$60; black swivel chair, \$20. 722-9483
- ★ Purebred chocolate Lab puppies, 11 weeks old, shots, wormed, 2 males, \$175 each. 464-9977
- ★ Pioneer 6-disc CD player, in box w/disc magazine, remote, instructions, cables, \$75. 880-1544
- ★ Cherry dining table, oval, Queen Anne style, with 4 empire chairs, Pennsylvania House, \$900. 882-1097
- ★ Kitchen dinette set, table, four chairs, \$110. 533-2287
- ★ Wet/dry shop vacuum w/accessories, 16-gallon, \$35. 881-5642
- ★ Camera, Kodak ADVANTix 5800MRX, triple format, 26-130mm zoom, auto focus. Shutter 1/2 to 1/390 sec. \$300. 881-0278.
- ★ Special made queen-size comforter, bed skirt and curtains, floral print. \$200 obo. 837-7465

Vehicles

- ★ 1999 Ranger X-cab, 4-dr, 4WD, 21,500 miles, \$19,750. 883-8608
- ★ 1993 Dodge Grand Caravan SE, one-owner, many new parts, service records available, \$5,300 obo. 895-9520
- ★ 1998 Honda Civic LS, 4-door, PW/PDL, automatic, silver, new tires, maintenance records, 45K miles, \$12,700. 230-6846
- ★ 1992 Nissan 240 SX, dark green, automatic, am/fm CD, a/c, moon-roof, \$2,400. 931-4144
- ★ 1997 Ford F-250 XLT 4-wheel drive pickup w/towing pkg., 40K miles, auto, \$16,250. 931-732-4742
- ★ 1992 Acura Integra, 2-door hatchback, red, 5-speed, sunroof, am/fm/cassette, a/c, 107K miles, \$4,800 obo. 757-3320
- ★ 1998 Honda Accord EX, green. low mileage, garaged, new tires, one-owner. \$17,900. 881-9233
- ★ 1987 Toyota Camry, 4-door, brown, needs head gasket, \$225. 882-7084
- ★ 1998 Ford Club Wagon XLT, 8-passenger van, 51K miles, sliding door, \$16,995. 882-6272
- ★ 1996 Nissan Maxima GLE, leather, Bose stereo, sunroof, security system, 74K miles, \$13,000. 890-0768
- ★ 1992 Buick Riviera, beige, 45K miles,

\$6,000. 536-5132

- ★ 1993 Cadillac Fleetwood Brougham, white, 30K miles, one-owner. 883-4698
- ★ 1997 BMW Z3, automatic, red w/tan leather interior & top, 34K miles, \$24,900 obo. 233-5819
- ★ 1994 Nissan Sentra, 96K miles, red, 4-door, automatic, am/fm tape, a/c, \$2,895 obo. 464-0660
- ★ 1999 Chevy Z71 extended cab, charcoal gray, 4WD, CD player, keyless entry, \$21,500. 883-6724/658-7177
- ★ 1997 Dodge Caravan LE, all power, dual air, CD, double sliding doors, original owner, \$12,000. 533-0169

Wanted

- ★ Honda Civic, 94-96, low miles, one-owner w/no accidents, will take delivery in up to 3 months. 883-2757
- ★ Baby's changing table in good condition. 726-1498

Found

- ★ Paper products in large bag, Loading Docks, Bldg. 4200, Dec. 20. Call 544-7686 to identify/claim

Sports

Hockey game

The NASA Exchange is sponsoring The University of Alabama in Huntsville Chargers vs. the U.S. Air Force Academy in a hockey game at 7 p.m. Jan. 20 at the Von Braun Arena. The 2,500 tickets will be available to the Marshall team from administrative officers; the Government and Community Relations Department in Bldg. 4200, room 828; or the NASA Exchange in Bldg. 4752 beginning Friday.

MARSHALL STAR

Vol. 41/No. 17

Marshall Space Flight Center, Alabama 35812
(256) 544-0030
<http://www1.msfc.nasa.gov>

The Marshall Star is published every Thursday by the Internal Relations and Communications Department at the George C. Marshall Space Flight Center, National Aeronautics and Space Administration. Contributions should be submitted no later than Monday noon to the Marshall Internal Relations and Communications Department (CD40), Bldg. 4200, room 101. Submissions should be written legibly and include the originator's name. Send electronic mail submissions to: intercom@msfc.nasa.gov The Marshall Star does not publish commercial advertising of any kind.

Manager of Internal Relations
and Communications — Robert Champion
Editor — Debra Valine

U.S. Government Printing Office 2001-633-095-20030

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